

Subpart P

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Objectives

- Identify hazards associated with portable hand and power tools
- Identify specific precautions
- Identify general safety precautions

General Safety Precautions

- Keep all tools in good condition
 - Regular maintenance
- Right tool for the right job
- Inspect for damage
- Manufacturer's instructions



General Safety Precautions

Hazard Prevention

**Keep all tools in good condition
with regular maintenance**

Use the right tool for the job

**Examine each tool for damage
before use**

**Operate according to the
manufacturer's instructions**

**Provide and use the proper
protective equipment**

General Safety Precautions (cont.)



- PPE
- Safe work procedures
 - Responsibility of the employer

General Safety Precautions (cont.)

- 1910.242(a)
 - Employers responsibility
 - Safe condition of tools
 - Including personal tools

Hand Tools

- Non powered
- Largest hazard
 - Misuse
 - Improper maintenance
- Safe use
 - Direction of knives and blades
 - Sharp knives and blades
 - Safe working surfaces

Hand Tools (cont.)



Power Tools

- Classification by power source
 - Electric
 - Pneumatic
 - Liquid Fuel
 - Hydraulic
 - Powder Actuated

Power Tools (cont.)

- 1910.243 (a)(1)
 - Upper blade guard
 - Lower blade guard
 - Automatically returns to starting position



Power Tools (cont.)

- 1910.243(a)(2)
 - Constant Pressure Switch
 - Saws and Chainsaws
 - Lock-on control (single motion turnoff)



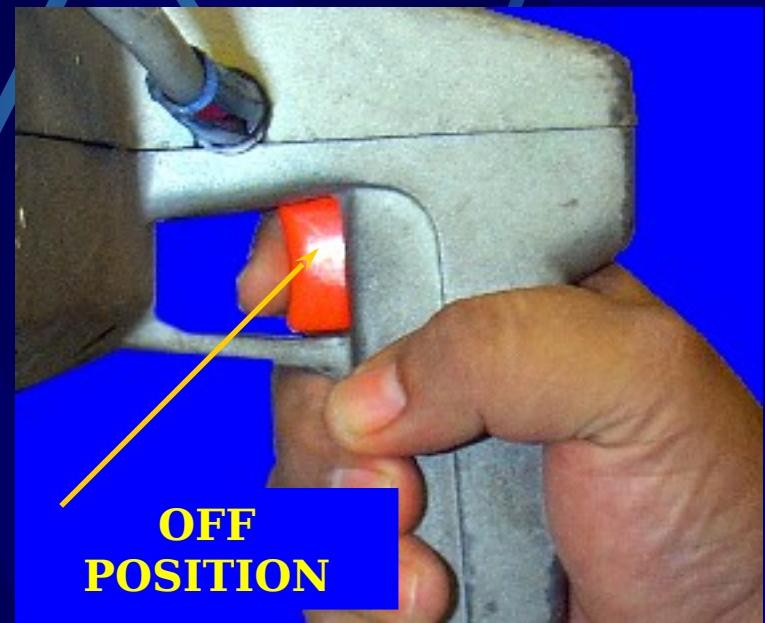
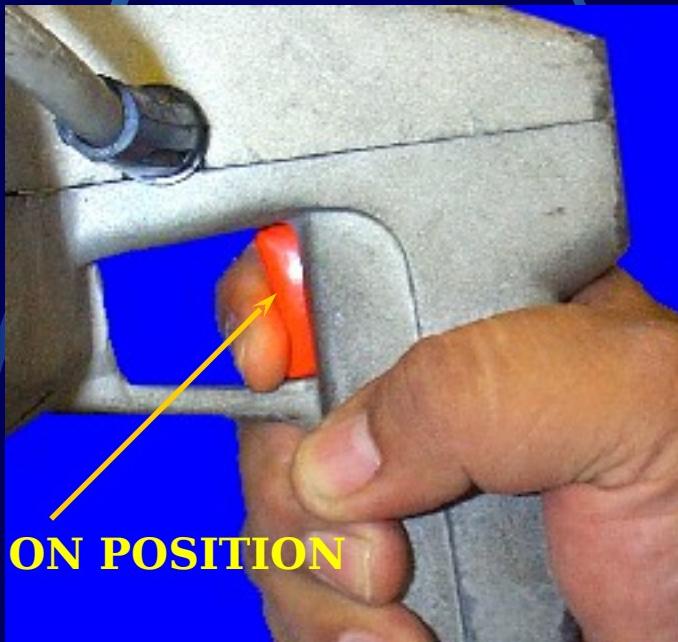
Power Tools (cont.)

- Momentary Contact “on/off” switch
 - Drills
 - Tappers
 - Fasteners
 - Drivers
 - Grinders – Greater than 2” in dia.
 - Disc and Belt Sanders
 - Reciprocating Saws

Power Tools (cont.)

- Positive “on/off” controls
 - Disc Sanders – w/ discs 2” in dia. Or less
 - Routers
 - Trimmers
 - Shears
 - Jig Saws – w/ blade $\frac{1}{4}$ ” wide or less

Power Tools (cont.)



Power Tools (cont.)

- 1910.243(a)(3)
 - Portable belt sanding machines
 - Guard nip point where belt runs onto pulley
 - Guard unused run of belt

Power Tools (cont.)

- Never carry tools by cords
 - Never pull cords to disconnect
- Disconnect tools when not in use or during maintenance
- Secure work with vice or clamp
 - Allows two hands for working
- Users manual



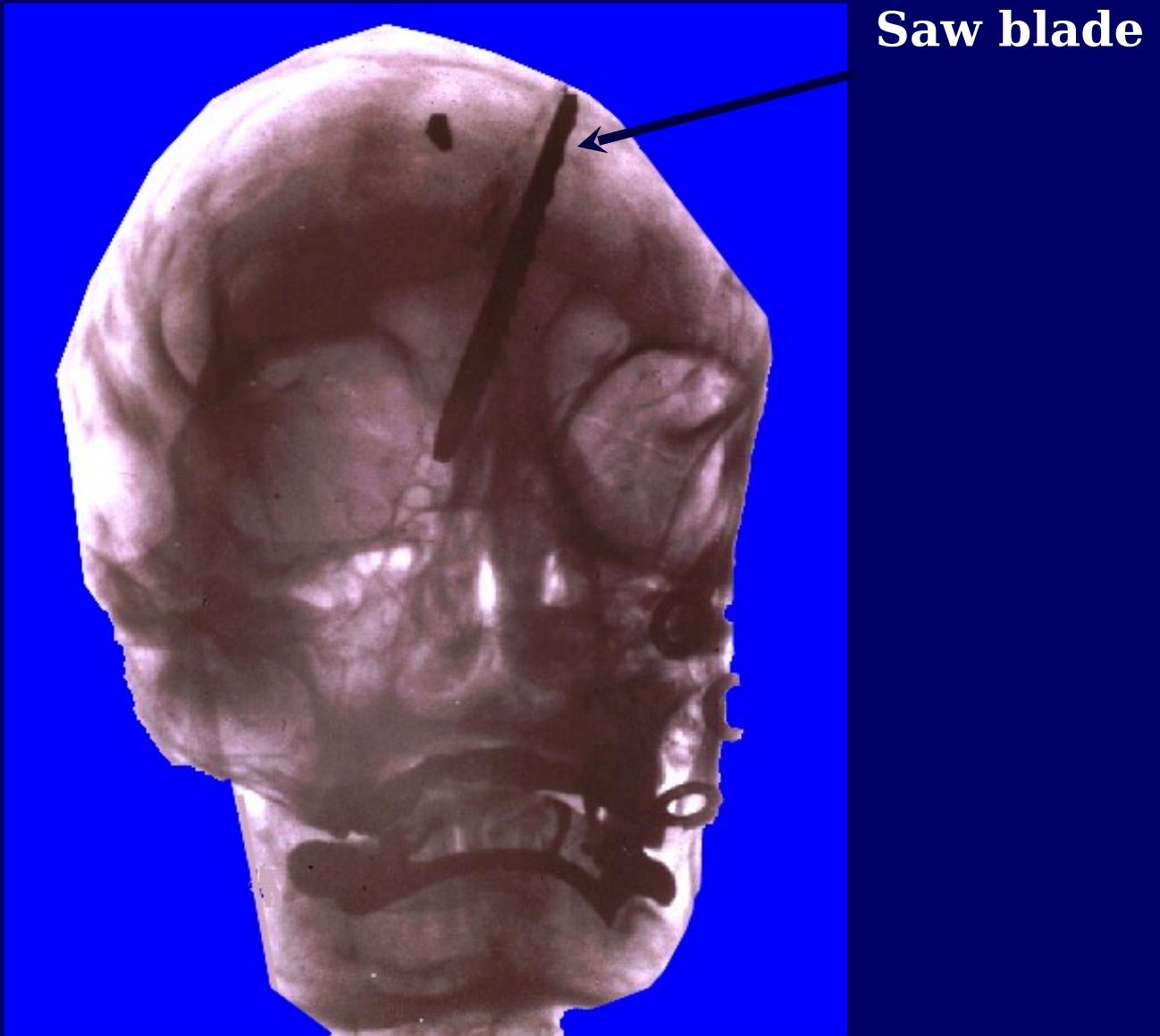
Power Tools (cont.)

- Proper apparel
 - Loose clothing, hair, or jewelry
- Tag all damaged tools “Out of Service”
- Keep blades and knives sharpened

Power Tools (cont.)

- 1910.243(a)(4)
 - Cracked saws
 - Removed from service

Disintegrating saw blade and parts strike operator in the head and face



Electric Tools

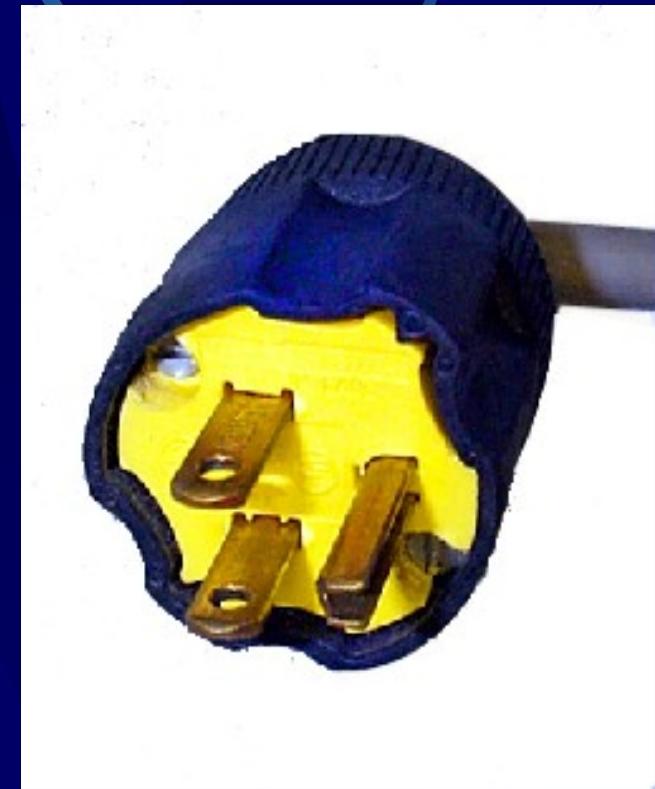
- Burns
- Slight Shock
 - Indirect injuries - Ladders
- Fibrillation

Electric Tools (cont.)

- 1910.243(a)(5)

- Grounding
- Double insulated
 - Recognition
- GFCI
 - Wet or damp locations

Electric Tools (cont.)



Electric Tools (cont.)



Electric Tools (cont.)

Double Insulated Marking



Powered Abrasive Wheels

- Flying fragments
 - PPE
- Ring test – 1910.243(c)(5)(i)
- Mounting
 - Follow mfg's instructions

Abrasive Wheels (cont.)



Max RPM



Abrasive Wheels (cont.)

- Start up
 - Not directly in front

- Guards – 1910.243(c)(1) – (c)(4)

- Protect from moving wheel surface
 - Protect from breaking wheel fragments
 - Exception – When work protects the operator

Abrasive Wheels (cont.)



180 deg

Abrasive Wheels (cont.)

- 1910.243(c)(1)(i)

- Exceptions
 - Wheels used within the work
 - 2" or smaller in diameter
 - Cones, plugs, etc. where work offers protections

Abrasive Wheels (cont.)

- 1910.243(c)(6) – Other exclusions
 - Natural sandstone wheels
 - Metal, wooden, cloth, or paper discs having a layer of abrasive surface

Powder Actuated Tools

- 1910.243(d)(1)
 - Meet ANSI A10.3 – 1970
 - PPE
 - Eye Protection
 - Head and face depending on conditions

Powder Actuated Tools (cont.)

- 1910.243(d)(2)
 - Protective shield at least 3.5" in diameter
 - Designed to confine flying fragments



Powder Actuated Tools (cont.)

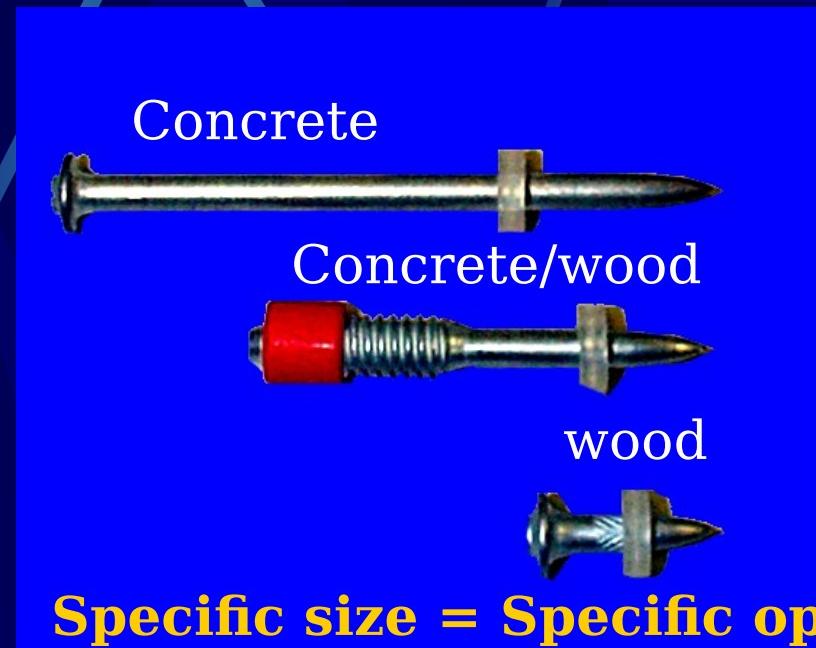
- 1910.243 (d)(2)

- Firing relies on at least two separate and distinct operations
- Firing Mechanism must prevent the tool from firing:
 - During loading
 - While preparing to fire
 - If dropped

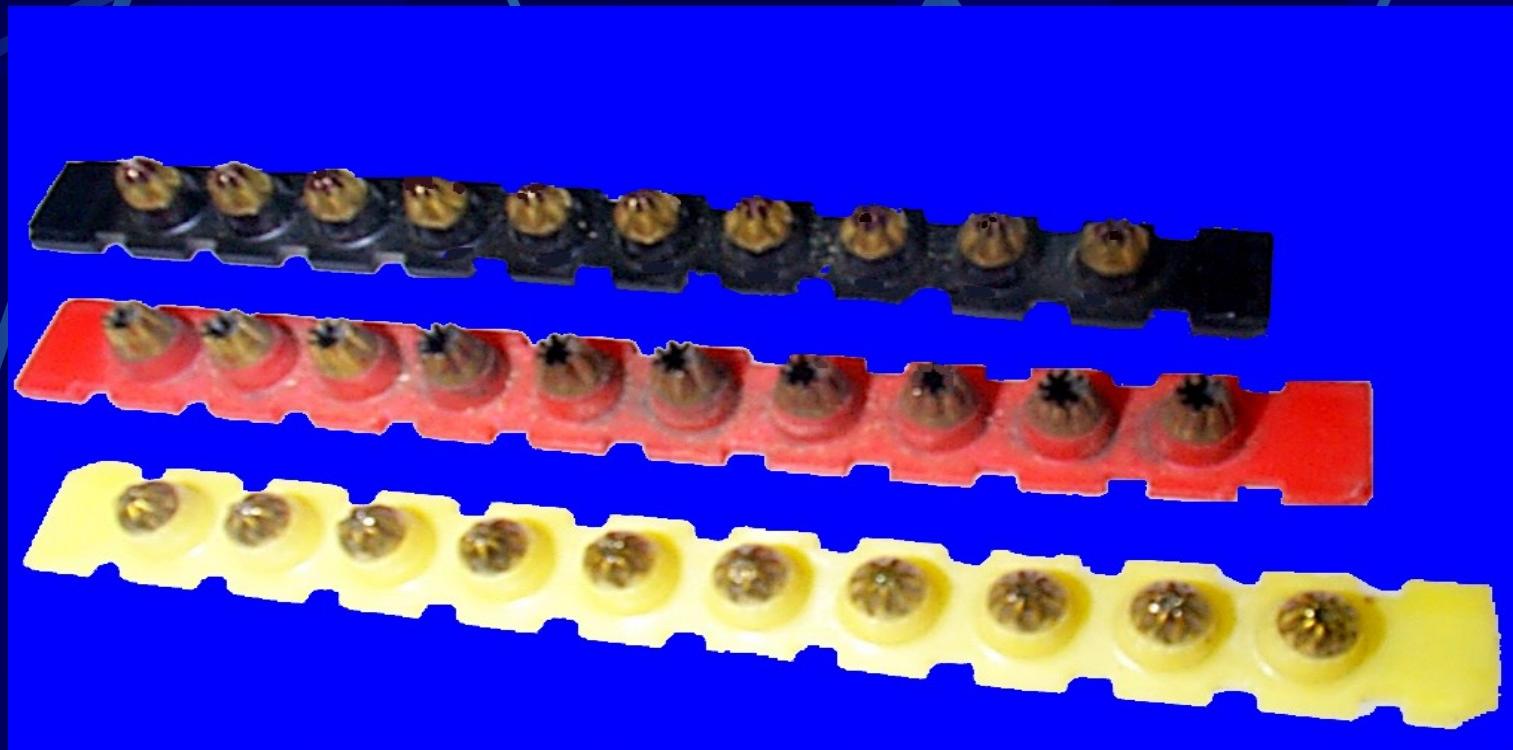
Powder Actuated Tools (cont.)

- 1910.243(d)(3)

- Fasteners used in tool specifically designed for that tool
- Designed for the material that is being driven into



Charges used in powder actuated tools



Right size charge with right size fastener

Powder Actuated Tools (cont.)

- 1910.243(d)(4)
 - Tools must be inspected before use
 - Defective tools taken out of service immediately
 - Tools not loaded until just before intended firing

Loaded or empty tools are never to be pointed at anyone

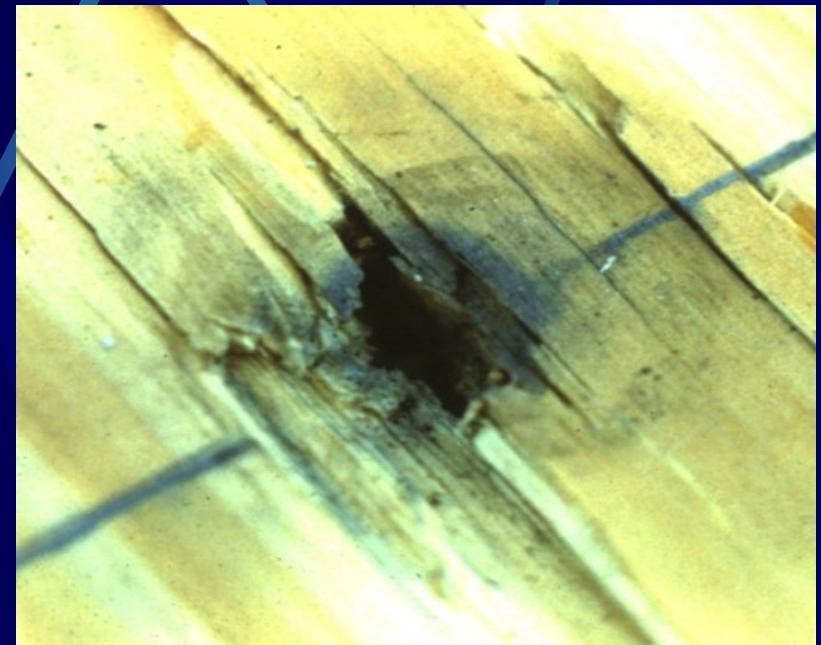
Powder Actuated Tools (cont.)

- Fasteners not driven into:

- Very hard or brittle materials
 - Cast iron
 - Glazed tile
 - Surface-hardened steel
 - Glass block
 - Live rock
 - Face brick
 - Hollow tile

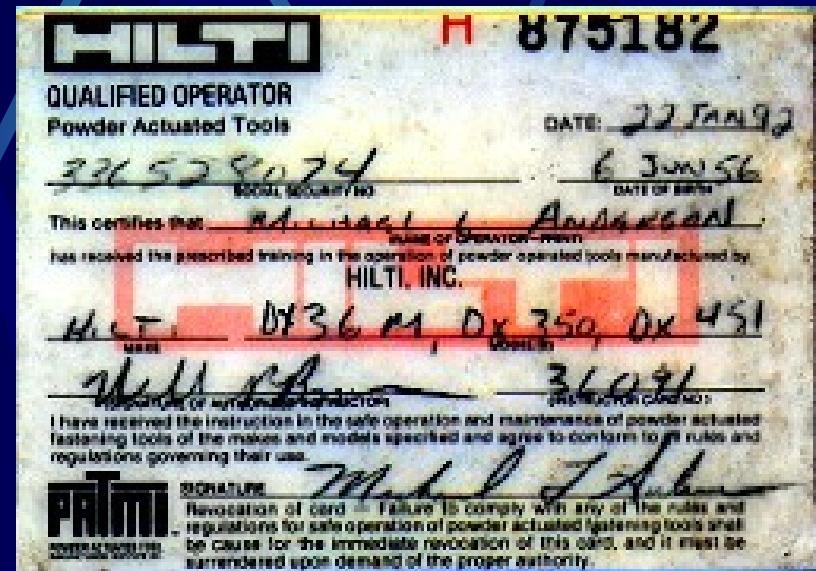
Powder Actuated Tools

- Avoid driving into easily penetrated material
 - Unless backed
- Do not use tools in explosive or flammable atmosphere



Powder Actuated Tools (cont.)

- Operators must be trained in the operation of this tool
 - Manufacturer's training



Powder Actuated Tools

● General Safety Precautions:

- Inspection
- Firing
- Misfires
- Defects

Powder Actuated Tools

- Inspection:
 - It's clean
 - All parts operate freely
 - The barrel is free from obstructions

Powder Actuated Tools

• Firing

- Keep hands clear of the barrel
- 5 pounds of force against working material

Powder Actuated Tools

● Misfires

- Wait 30 seconds
- Try firing again
- Wait another 30 sec.
- Remove the cartridge
- Place in water

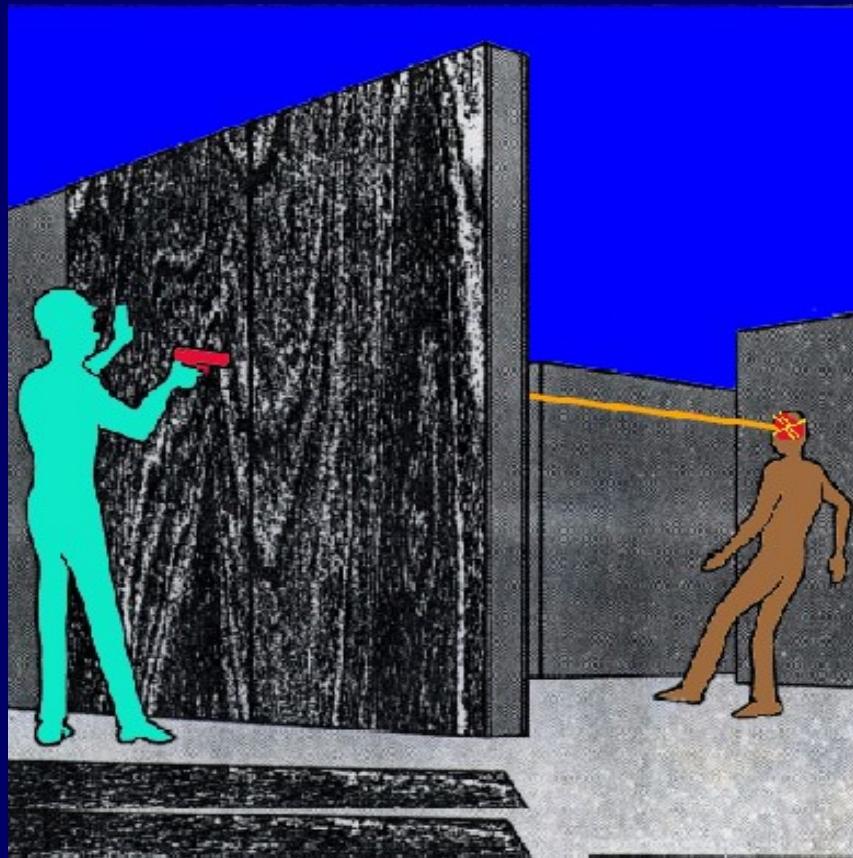
Powder Actuated Tools

- Defects

- Tag “do not operate”
- Remove from service

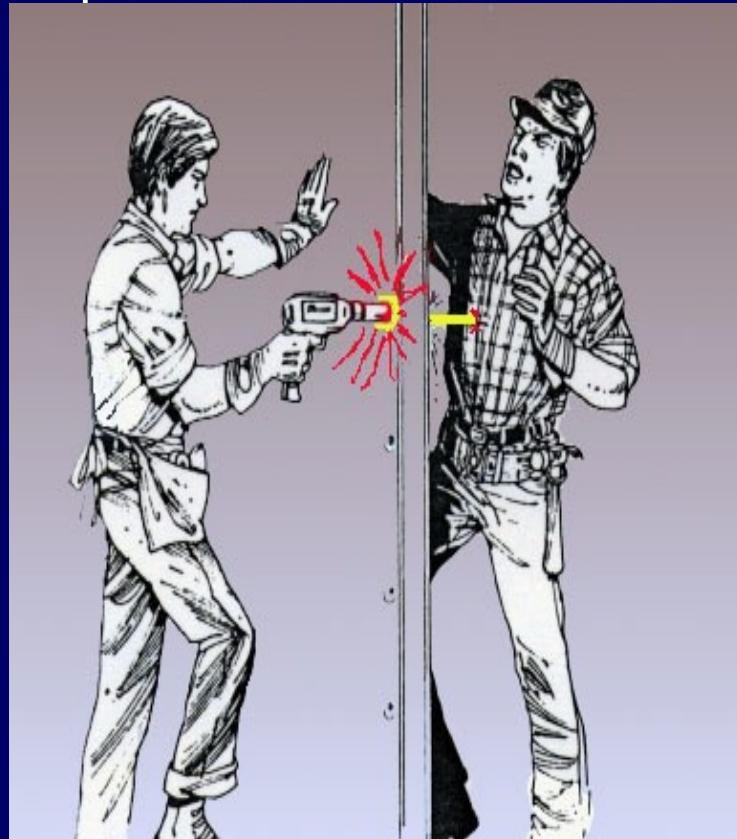
“FATAL FACT”

Employee killed when struck in head by a nail fired from a powder actuated tool. Tool operator was attempting to anchor a plywood form in preparation for pouring a concrete wall.



“FATAL FACT”

Employees performing remodeling operations building a wall. Operator was attempting to anchor plywood to a 2"x 4" stud. The nail penetrated the stud and struck the victim. One worker killed when struck by a nail from a powder-actuated tool.



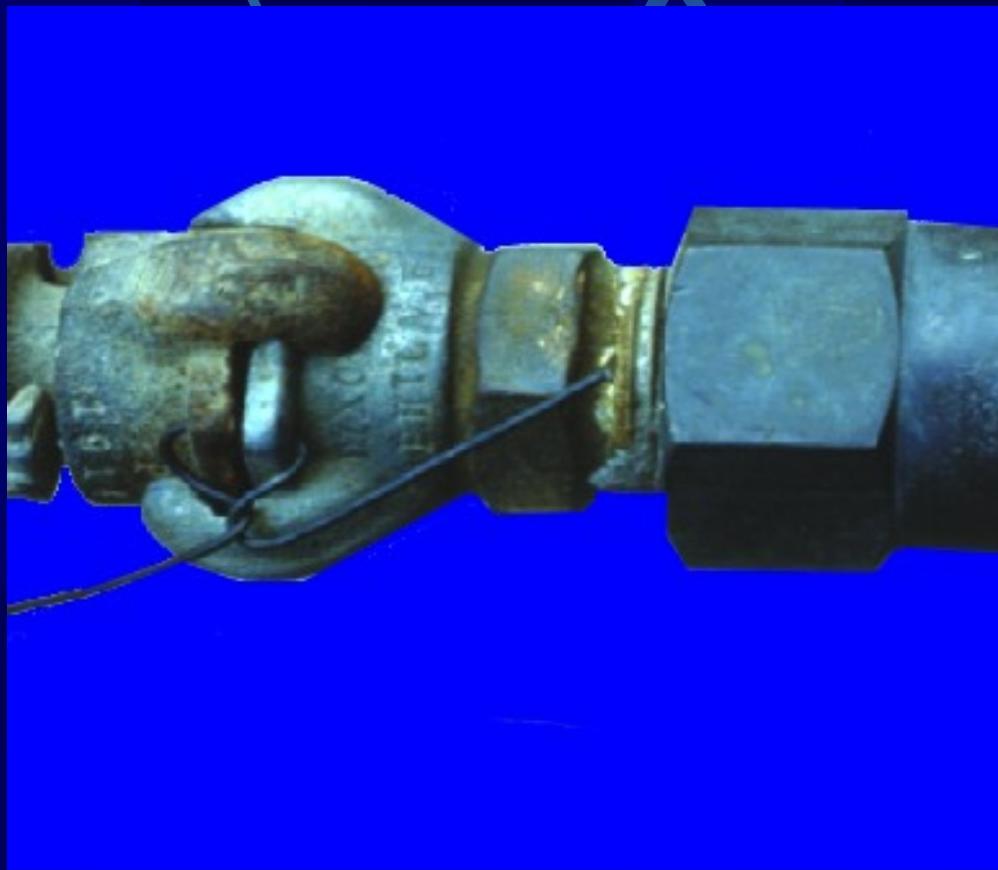
Pneumatic Tools

- Employer responsibilities for tools 243(a)
- Compressed air nozzles (for cleaning)
 - Safety tip - 1910.242 (b)
 - Not for cleaning except where dead-ended pressure less than 30 psi. Must have PPE and chip guarding
- Tool Retainers - 1910.243(b)(1)
- ***Air hose and connections must be designed for the pressures and service used in - 1910.243(b)(2)***

Pneumatic Tools

- Appropriate PPE
 - Eye Protection
 - Hearing Protection
- Other Employees
 - Screens

Pneumatic Tools (cont.)



Pneumatic Tool Connections

UNACCEPTABLE

HOSE
CLAMP



ACCEPTABLE



Hydraulic Tools

- Low viscosity fluid
- PPE
- Approved fire resistive fluid

Power Lawnmowers

- 1910.243(e)(1)
 - Must meet ANSI B71.1-X1968
 - Power transmission apparatus must be positioned or guarded
 - A shut-off device must be provided
 - Require manual and intentional reactivation

Power Lawnmowers

- All positions of operating controls clearly identified
- “Caution. Be sure the operating control(s) is in neutral before starting the engine”
 - On self-propelled mowers

Power Lawnmowers

- 1910.243(e)(2)
 - “Caution” – Placed at or near discharge opening

Jacks

- Hydraulic
- Ratchet
- Screw
- Lever

Jacks (cont.)

- A device that prevents the jack from extending too far
- Posted load limit - 1910.244(a)(1)
- Cribbing-1910.244(a)(2)
 - Blocks
 - Jack stands

Jacks (cont.)

- Dispersion
 - Base plate
 - Slip block



Jacks (cont.)

● Inspection

- Constant or intermittent use – every 6 mo.
- Before and after special work
- Before and after abnormal load or shock

● Damaged jacks must be tagged “Out of service”

Abrasive Blast Cleaning Nozzles

- 1910.244 (b)
 - Operating valve that must be held open manually
 - Support to hold nozzle when not in use